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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/691,537 | 10/24/2003 | Yoshiki Sugeta | 2003-1545A | 6886 |

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EXAMINER

PERKINS, PAMELA E

| ART UNIT | PAPER NUMBER |
|----------|--------------|
| 2822 | |

DATE MAILED: 02/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

| | | | |
|------------------------------|-------------------------------|-------------------------------|--|
| Office Action Summary | Application No. 10/691,537 | Applicant(s) SUGETA ET AL. | |
| | Examiner Pamela E. Perkins | Art Unit 2822 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This office action is in response to the filing of the application papers on 24 October 2003. Claims 1-8 are pending.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-5 and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Chun (6,486,058).

Referring to claim 1, Chun discloses a method of forming fine patterns where a substrate (24) having photoresist patterns (26') is subject to a hydrophilic treatment, covering the substrate (24) having photoresist patterns (26') with an over-coating agent (30) for forming fine patterns, applying heat treatment to cause thermal shrinkage of the over-coating agent (30) so that the spacing between adjacent photoresist patterns (26'') is lessened by the resulting thermal shrinking action, and removing the over-coating agent (30) substantially completely (Fig. 3; col. 3, lines 39-59).

Referring to claim 2, Chun discloses performing the hydrophilic treatment by applying a hydrophilic solvent on the substrate (24) having photoresist patterns (26'') (col. 4, lines 56-59).

Referring to claim 3, Chun discloses the hydrophilic solvent is at least one member selected from the group consisting of pure water, a water-soluble surfactant aqueous solution, and an alcohol aqueous solution (col. 4, lines 61-63).

Referring to claim 4, Chun discloses the hydrophilic solvent is pure water (col. 4, line 61).

Referring to claim 5, Chun discloses the over-coating agent containing a water-soluble polymer (col. 2, lines 48-61).

Referring to claim 8, although Chun does not specific disclose performing the heat treatment at a temperature that does not cause thermal fluidizing of the photoresist patterns on the substrate, it is inherent that the heat treatment performed in Chun does not cause thermal fluidizing of the photoresist patterns because the heat treatment is performed at a low temperature (col. 4, lines 15-25).

Claims 1, 2 and 5-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Kanda et al. (6,555,607).

Kanda et al. disclose a method of forming fine patterns where a substrate having photoresist patterns is subject to a hydrophilic treatment, covering the substrate having photoresist patterns with an over-coating agent for forming fine patterns, applying heat treatment to cause thermal shrinkage of the over-coating agent so that the spacing between adjacent photoresist patterns is lessened by the resulting thermal shrinking action, and removing the over-coating agent substantially completely (col. 5, lines 1-47).

Referring to claim 2, Kanda et al. disclose performing the hydrophilic treatment by applying a hydrophilic solvent on the substrate having photoresist patterns (col. 5, lines 32-47).

Referring to claim 6, Kanda et al. disclose the water-soluble polymer is at least one member selected from the group consisting of alkylene glycolic polymers, cellulose derivatives, vinyl polymers, acrylic polymers, urea polymers, epoxy polymers, melamine polymers and amide polymers (col. 2, lines 35-53).

Referring to claim 7, Kanda et al. disclose the over-coating agent of claim 1 wherein the over-coating agent is an aqueous solution having a solids content of 0.1 mass % or more (col. 2, lines 35-38). It is noted that the specification contains no disclosure of either the critical nature of the claimed concentrations or any unexpected results arising there from. It would have been obvious to one of ordinary skill in the art that the over-coating agent is an aqueous solution having a solids content of 3 - 50 mass % since it has been held that "In such an situation, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range." *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990) See MPEP § 2144.05.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Amblard (6,764,946) disclose a method of forming fine patterns comprising: covering the substrate having photoresist patterns with an over-coating agent for forming fine patterns, applying heat treatment to cause thermal shrinkage of


the over-coating agent so that the spacing between adjacent photoresist patterns is lessened by the resulting thermal shrinking action, and removing the over-coating agent substantially completely.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pamela E. Perkins whose telephone number is (571) 272-1840. The examiner can normally be reached on Monday thru Friday, 9:00am to 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on (571) 272-1852. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PEP


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